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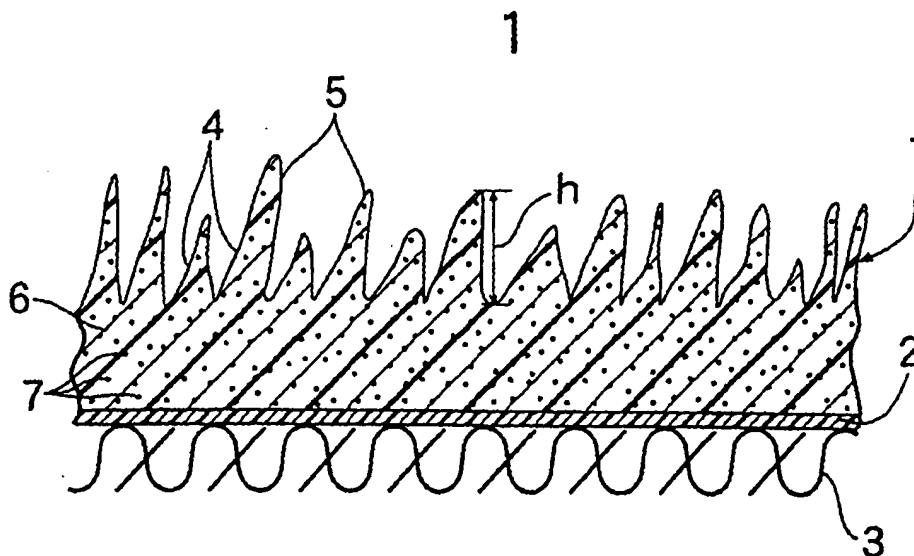
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00187 Roma (IT)**(54) **SKIN OF SHEET FOR VEHICLE**

(57) A skin of a seat for a vehicle includes a skin body made of a synthetic resin, and an infrared-ray re-

flective pigment dispersed in the skin body. Thus, the skin of the seat is not heated to a hot state, even if it is left to stand under the blazing sun.



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## Description

## FIELD OF THE INVENTION

5 [0001] The present invention relates to a skin of a seat for a vehicle.

## BACKGROUND ART

10 [0002] A black skin of a seat, for example, for a two-wheeled motor vehicle, is conventionally popular from the viewpoint of design. The skin is comprised of a skin body made of a synthetic resin, e.g., polyvinyl chloride composition, and carbon black as a black pigment dispersed in the skin body.

[0003] The conventional black skin has the advantage that it is inexpensive and stable in physical properties. However, when the two-wheeled motor vehicle is left to stand under the blazing sun, it is inevitable that the black skin will be heated to a hot state by infrared rays absorbed by the carbon black.

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## DISCLOSURE OF THE INVENTION

[0004] It is an object of the present invention to provide a skin of a seat for a vehicle, which is of the above-described type, and which is not heated to a hot state, even if it is left to stand under the blazing sun.

20 [0005] To achieve the above object, according to the present invention, there is provided a skin of a seat for a vehicle, comprising a skin body made of a synthetic resin, and an infrared-ray reflective pigment dispersed in the skin body.

[0006] With the above arrangement, a rise in temperature of the skin is inhibited by the infrared-ray reflective pigment. Therefore, the skin is not heated into a hot state even under the blazing sun.

25 [0007] To achieve such inhibition of the rise in temperature of the skin, if the amount of synthetic resin mixed to form the skin body is defined as 100 parts, the amount of infrared-ray reflective pigment mixed is set at 0.3 parts or more. In this case, if the amount of infrared-ray reflective pigment mixed is lower than 0.3 parts, the intended purpose cannot be achieved. On the other hand, if the amount of infrared-ray reflective pigment mixed exceeds 10 parts, a disadvantage of a plate-out in a producing step will arise. Therefore, an upper limit of the amount of pigment mixed is set at 10 parts.

30 [0008] When the skin of the seat has a roughened surface having a plurality of recesses and projections, the sense of a human's skin feeling hot becomes duller than that when the skin of the seat has a flat surface. Therefore, the surface of the skin is formed into a roughened surface having a plurality of recesses and projections dispersed therein. In this case, it is desirable that the height of the projections in the recesses and projections is in a range from 0.05 mm (inclusive) to 0.35 mm (inclusive). However, if the height is less than 0.05 mm, the above-described effect cannot be achieved. On the other hand, if the height exceeds 0.35 mm, there arise disadvantages that see-through portions are created, or dusts or the like are liable to be accumulated in the recesses, particularly when the skin is thin in total thickness. Examples of the skin having such surface include a skin whose surface is formed into a sueded fashion.

35 [0009] In addition, the skin body is made of one of a polyvinyl chloride composition and a foamed polyvinyl chloride composition, for example.

40 [0010] Another embodiment of a skin is of a two-layer structure comprising an upper layer and a lower layer affixed to the upper layer. In this case, the upper layer has an upper layer body made of a synthetic resin, and an infrared-ray reflective pigment dispersed in the upper layer body. The lower layer has a lower layer body made of a synthetic resin, and carbon black dispersed in the lower layer body. The upper layer in such embodiment corresponds to a skin having the above-described single layer structure and hence, various requirements as described above and pertaining to the above-described skin are also applied to the upper layer.

45 [0011] If the skin is formed into the two-layer structure, the upper layer can be thinned, and the amount of the infrared-ray reflective pigment used causing an increase in cost can be reduced.

## BRIEF DESCRIPTION OF THE DRAWINGS

50 [0012]

Fig.1 is a sectional view of an embodiment of a skin.

Fig.2 is a sectional view of another embodiment of a skin.

55 BEST MODE FOR CARRYING OUT THE INVENTION

[0013] Referring to Fig.1, a skin 1 used in a seat of a two-wheeled motor vehicle as a vehicle has a base knitted-fabric 3 affixed to its back with an adhesive layer 2 interposed therebetween. The surface of the skin 1 is formed into

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a sueded fashion and hence, is a roughened surface having a plurality of recesses 4 and a plurality of projections 5. The height h of the projections 5 is in a range from 0.05 mm (inclusive) to 0.2 mm (inclusive).

**[0014]** The skin 1 includes a skin body 6 made of a polyvinyl chloride composition, and a black infrared-ray reflective pigment 7 dispersed in the skin body 6.

**[0015]** The polyvinyl chloride composition comprises a blend comprising components, which will be described below. The blend is a reinforcing blend intended to protect the infrared-ray reflective pigment. Meanwhile, in the polyvinyl chloride composition, the term "part" means "a part by weight" and likewise hereinafter.

10	Resin component (polyvinyl chloride)	100 parts
	Phthalate plasticizer (wherein phthalate was made using an alcohol having 10 to 14 carbon atoms)	72 parts
	Phosphate-based plasticizer (TCP)	7 parts
15	Ba-Zn based stabilizer	3 parts
	Amine-based stabilizer	0.4 parts

**[0016]** The black infrared-ray reflective pigment 7 used is Paliogen Black (registered trademark) L0084 made by BASF, Co., and the amount of pigment mixed is set at one part per 100 parts of the polyvinyl chloride.

**[0017]** For comparison, a skin having a flat surface and a conventional structure was selected. This skin has a base knitted-fabric affixed to its back with an adhesive layer interposed therebetween, likewise as described above. A polyvinyl chloride composition for forming the skin comprises a usual blend having the following components:

25	Resin component (polyvinyl chloride)	100 parts
	Phthalate plasticizer (DOP)	80 parts
	Ba-Zn based stabilizer	3 parts

**[0018]** The pigment used is carbon black. The amount of carbon black mixed is set at 0.5 parts per 100 parts of the polyvinyl chloride.

**[0019]** The skin 1 according to the embodiment and the skin in the comparative example were subjected to the following heating test: Using an incandescent lamp, light was applied to the surface of each of the skins from a location corresponding to a height of 180 mm, and the temperature of the surface was measured by a thermo-viewer. When the temperature of the surface in the comparative example reached 90°C, the temperature of the surface in the embodiment was measured, and the result showed 59.7°C. Under the blazing sun showing an open-air temperature of 37°C, the highest temperature of the surface in the comparative example reached 78.9°C, but that in the embodiment was 60.3°C. In any case, it was found that when the experimenter touched the surfaces in the embodiment with his or her hand, he or she did not feel hot, but when he or she touched the surfaces in the comparative example with his or her hand, he or she felt very hot. From the foregoing, an effect provided by the infrared-ray reflective pigment 7 was confirmed.

**[0020]** Fig.2 shows another embodiment. In this embodiment, a skin 1 comprises an upper layer 8, and a lower layer 9 affixed to the upper layer 8 by heat. A base knitted-fabric 3 is affixed to a back of the lower layer 9 with an adhesive layer 2 interposed therebetween. The upper layer 8 has an upper layer body 11 made of a synthetic resin, and an infrared-ray reflective pigment 7 dispersed in the upper layer body 11. The lower layer 9 has a lower layer body 12 made of a synthetic resin, and carbon black 13 dispersed in the lower layer body 12. The particular structure of the upper layer 8 is, for example, the same as that of the skin 1 in the previous embodiment shown in Fig.1, and the particular structure of the lower layer 9 is, for example, the same as that of the skin in the above-described comparative example.

**[0021]** The polyvinyl chloride may be a foamed product, and woolly-nylon fabric or the like may be used as a base fabric. Further, an infrared reflective pigment may be dispersed in each of the upper and lower layers to produce a thick skin.

## INDUSTRIAL APPLICABILITY

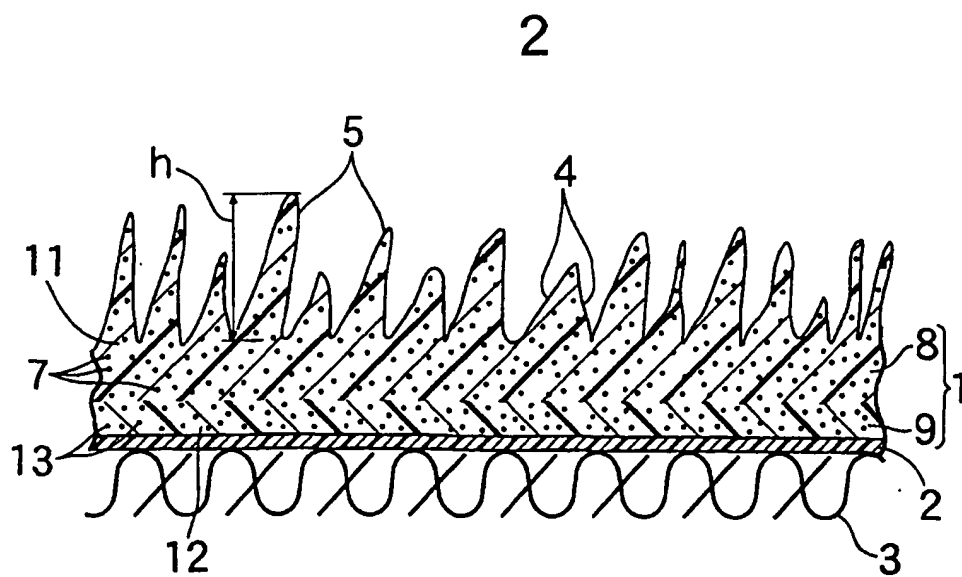
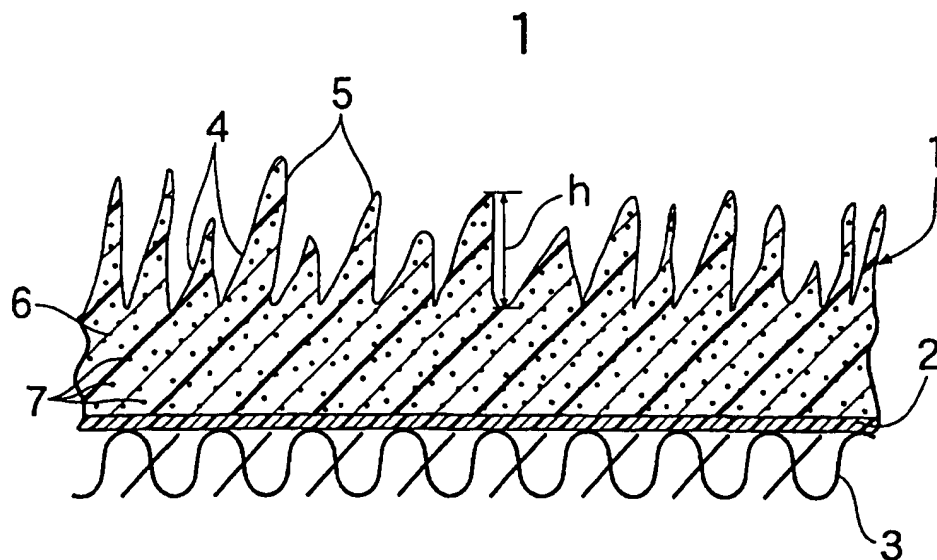
**[0022]** The skin of the seat for vehicle according to the present invention is applicable to a two-wheeled motor vehicle and further to another vehicle, e.g., a bus, a truck or an automobile.

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## Claims

- 5
1. A skin of a seat for a vehicle, comprising a skin body (1) made of a synthetic resin, and an infrared-ray reflective pigment (7) dispersed in said skin body (1).
2. A skin of a seat for a vehicle according to claim 1, wherein when the amount of synthetic resin mixed for forming the skin body (1) is defined as 100 parts, the amount of infrared-ray reflective pigment (7) mixed is in a range from 0.3 parts (inclusive) to 10 parts (inclusive).
- 10
3. A skin of a seat for a vehicle according to claim 1 or 2, wherein the surface of said skin is a roughened surface having pluralities of recesses and projections (4, 5).
- 15
4. A skin of a seat for a vehicle according to claim 3, wherein the height h of the projections (5) in said recesses and projections (4, 5) is of 0.05 mm or more.
- 20
5. A skin of a seat for a vehicle according to claim 1, 2, 3 or 4, wherein said skin body (6) is made of one of a polyvinyl chloride composition and a foamed polyvinyl chloride composition.
- 25
6. A skin of a seat for a vehicle, comprising an upper layer (8) and a lower layer (9) affixed to said upper layer (8), said upper layer (8) having an upper layer body (11) made of a synthetic resin, and an infrared-ray reflective pigment (7) dispersed in said upper layer body (11), said lower layer (9) having a lower layer body (12) made of a synthetic resin, and carbon black (13) dispersed in said lower layer body (12).
- 30
7. A skin of a seat for a vehicle according to claim 6, wherein when the amount of synthetic resin mixed for forming said upper layer body (11) is defined as 100 parts, the amount of infrared-ray reflective pigment (7) is in a range from 0.3 parts (inclusive) to 10 parts (inclusive).
8. A skin of a seat for a vehicle according to claim 6 or 7, wherein the surface of said upper layer (8) is a roughened surface having pluralities of recesses and projections (4, 5).
- 35
9. A skin of a seat for a vehicle according to claim 8, wherein the height (h) of the projections (5) in said recesses and projections (4, 5) is of 0.05 mm or more.
- 40
10. A skin of a seat for a vehicle according to claim 6, 7, 8 or 9, wherein said upper layer body (11) is made of one of a polyvinyl chloride composition and a foamed polyvinyl chloride composition.
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- 50
- 55

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP00/06778

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.<sup>7</sup> D06N3/06 B32B27/20  
C08J5/18 B62J1/18

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl.<sup>7</sup> D06N3/00-7/06 B32B27/00-27/42  
C08J5/00-5/24 B62J1/00-1/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Jitsuyo Shinan Koho 1926-1996 Jitsuyo Shinan Toroku Koho 1996-2001  
Kokai Jitsuyo Shinan Koho 1971-2001 Toroku Jitsuyo Shinan Koho 1994-2001

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 9-59882, A (Kuraray Co., Ltd.), 04 March, 1997 (04.03.97), Claims, [Claim 1]; Par. Nos. [0001], [0014], [0016] (Family: none)	1, 2, 6, 7
Y	JP, 11-240477, A (Koichi TOYAMA), 07 September, 1999 (07.09.99), Par. No. [0002], lines 3-4 (Family: none)	1-10
Y	JP, 6-2280, A (Nissan Motor Co., Ltd.), 11 January, 1994 (11.01.94), Claims, [Claim 1]; Par. No. [0002], lines 7-8 (Family: none)	3-5, 8-10
Y	JP, 58-167642, A (The BF Goodrich Company), 03 October, 1983 (03.10.83), Full text & AU, 001135983, A1 15 September, 1983 (15.09.83) Full text	1, 2, 5, 10

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance  
"E" earlier document but published on or after the international filing date  
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
"O" document referring to an oral disclosure, use, exhibition or other means  
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
"&" document member of the same patent family

Date of the actual completion of the international search  
16 January, 2001 (16.01.01)

Date of mailing of the international search report  
30 January, 2001 (30.01.01)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

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Form PCT/ISA/210 (second sheet) (July 1992)

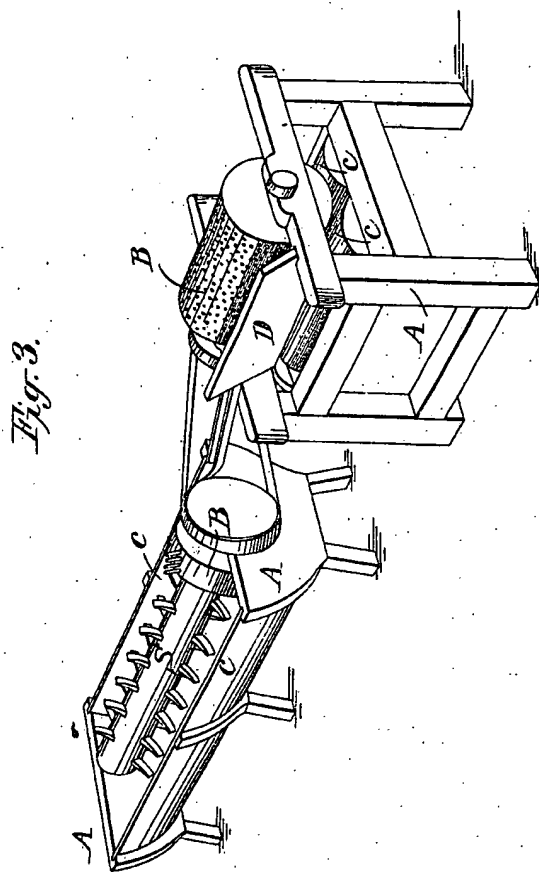
# Best Available Copy

SYLVANUS RICHARDSON.

MACHINE FOR WASHING AND PULVERIZING POTATOES IN THE MANUFACTURE OF STARCH.

Patent No. 563,

Patented, January 9, 1838.



*Only part of Drawing Accessible 1914.*

Best Available Copy

## UNITED STATES PATENT OFFICE.

SYLVANUS RICHARDSON, OF JERICHO, VERMONT.

## MACHINE FOR WASHING AND PULVERIZING POTATOES IN THE MANUFACTURE OF STARCH.

Specification of Letters Patent No. 563, dated January 9, 1838.

*To all whom it may concern:*

Be it known that I, SYLVANUS RICHARDSON, of Jericho, in the county of Chittenden and State of Vermont, have invented a new and useful machine for washing and pulverizing potatoes for the purpose of making them into starch, called and denominated "The Improved Starch-Mill," a full and complete description of which is as follows, to wit.

Figure 1, is a top view of the washer, which consists of a circular trough about 7 feet long and 28 inches diameter inside forming about two thirds of a circle, and being left open at the top. The shaft may be about 7 inches diameter with 4 rows of "arms" set in an oblique direction as seen by the form and direction of the mortises on the top of the shaft. The abovesaid "arms" are set in the shaft following each other in a spiral direction, whereby they operate as a conveyer to convey the potatoes from P where they enter, to the "block wheel" at the other end. The "division" as marked in the drawing, is a board permanently fixed in the trough, rising to the center, and cut out so as not to come in contact with the shaft. The "block wheel" is 16 inches in diameter and 6 inches thick, and has one, or more, rows of iron pins set in an oblique form or direction, as seen by the dots at B on the top; the same are seen at length at B' on the side. C, C, on Figs. 2 and 3 are grooves to receive the staves that form the trough. At D, in the end Fig. 3 is a place cut down to the center, where the potatoes are thrown over by the revolving of the pins in the "block wheel." Fig. 2 exhibits the end of the shaft with the arms and the whole inside view of the end of the trough.

Fig. 4, A A is the frame to contain the machinery, as seen by the drawing. B in the same figure is a cylinder 2 feet diameter and 26 inches long, covered with sheet iron punched from the inside to form a grater. C, C, are cylinders 26 inches long and 17 inches diameter, which are in contact and revolve toward each other. D, Fig. 4, is the bottom of a hopper, or slide, on which the potatoes fall from the washer and thence pass under the grating cylinder. E, E, E, are pulleys or band wheels over which a band is to pass to put the whole in motion; or the same may be put in motion by spur gears, having a coupling wheel to connect No. 1 and 2, and have No. 2 and 3 connect

with each other. The shaft of the washer may be put in motion by the pulley or band wheel, or by spur or bevel gears, and must revolve toward P. The proportions as hereinbefore suggested may be varied as experience or the amount of business may require. To put the "starch mill" in operation a sufficient quantity of water must be conveyed into the washing trough to keep it all times moderately running over. The machinery must then be put in motion, and the potatoes for washing must be fed in at P, and by the revolving of the oblique arms, will be washed and conveyed onto the division board, and will thence be thrown over to the block wheel, and from thence by the revolving of the block wheel, will be thrown by the pins through the opening at D Fig. 3, and will fall from thence into the hopper D Fig. 4 and thence pass under the grating cylinder B, Fig. 4 and after being grated it will drop between the rolling cylinders where the small pieces taken off by the grater will be completely crushed to a perfect pulp ready to be made into starch. The arms in the shaft of the washer being less in length than the inside diameter of the trough, leaves room for the small stones and other earthy matter to settle to the bottom, and the division board prevents the said earthy matter from getting under the block wheel, whereby the potatoes are fully separated from the earthy matter. Fig. 5 is a perspective view of the machine.

Your petitioner is aware that the various kinds of gearing required to put this machinery in motion has been used in various combinations and that grates and rollers have also been used, but your petitioner is not aware, nor does he believe that the trough for washing with its appendages, and the grater and rollers in their present arrangement, and for the uses and purposes hereinbefore set forth, have ever been so used.

He therefore claims as his invention—

The washing trough and its appendages in combination with the grater and rollers in their arrangement and combination as above described, for the uses and purposes hereinbefore described.

Witness my hand this 6th day of April A. D. 1837.

SYLVANUS RICHARDSON.

Witnesses:

ALMIRA S. JOHNSON,  
JOHN JOHNSON.